THE VETERINARY RECORD

A Weekly Journal for the Profession.

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No. 899. SEPTEMBER 30, 1905. VOL. XVIII

THE EIGHTH INTERNATIONAL VETERINARY CONGRESS AT BUDAPEST.

The Budapest International Veterinary Congress has come and gone, and the impression it has left is that of a most successful gathering. Its promoters are to be congratulated on the numbers attending the meetings, the number and quality of the papers read, the character of the discussions, and the resolutions carried. Professor Hutyra's untiring efforts were rewarded in his having the honour and pleasure of presiding over one of the largest if not the largest and most cosmopolitan gathering of veterinarians that has ever been held. The members numbered fourteen hundred and came from almost every quarter of the globe, representatives being observed from as far afield as China, Japan, South Africa, the United States of America, etc.

The English delegates have returned highly pleased with their visit to the Hungarian capital. Among those present were Professor M'Fadyean and Mr. Stockman, the Board of Agriculture delegates, Professor Mettam, the Irish Agricultural Department delegate, Professor Hobday, the Central Veterinary Association representative, Mr. Malcolm the National Veterinary Association representative, and Miss Cust and Mr. Dollar as private members. The English speaking contingent was further strengthened by Mr. Wollatt the Natal delegate, Dr. Theiler the Transvaal delegate, Dr. Pearson, Mr. Moore, and one or two colleagues from the United States, two Egyptian delegates, and Mr. Reynolds, M.R.C.V.S., Bohemia.

The proceedings commenced by a special welcome reception to the delegates by the president and other promoters of the Congress in the Banqueting Hall of the Hotel Royal, Budapest, at 8 p.m., on Saturday, Sept. 2nd. This meeting was very happily conceived, and proved a genial informal preliminary social gathering where old members of the Congress had the opportunity of meeting old friends and of making many new acquaintances Such a preliminary gathering in furthering the feeling of amity between the members from different nations could scarcely fail to add materially to the success of the gathering.

Not the least interesting part of these informal meetings is the opportunity it gives for members to see and speak to the various leaders in the field of veterinary knowledge—the personal meeting not infrequently modifying or amplifying the impression created solely by the written work, and in this way these meetings are of memorable interest to the members attending.

The next morning, Sunday, Sept. 3rd, at 11 a.m., a large company met at the Budapest Veterinary College to witness the unveiling of a statue of Azary, who, we were given to understand, had been a most distinguished teacher at the Budapest School.

At 4 p m. the same day the ceremonial opening of the Congress took place in the Banqueting Hall of the Hungarian Academy of Sciences. The delegates from the various countries represented were specially welcomed to Budapest on behalf of the Government by the Minister of Agriculture. In response to this official welcome, in the absence of Professor M'Fadyean, who had not then reached Budapest, Mr. Stockman was called upon to reply on behalf of the English speaking delegates, and acquitted himself in that pleasant easy happy manner we are getting to know so well.

The same evening His I. & R.H. The Archduke Josef, as patron of the Congress gave a reception by special invitation to the representatives of Foreign Governments, the Principals of Veterinary Schools, etc., in the Royal Castle. Thus, officially, everything possible was done to give the Congress an auspicious opening, and the week's social entertainment which followed more than maintained the high reputation for hospitality which the Hungarians so notably possess.

The next morning (Monday) at 9 a.m. the regular business meetings of the sections began and were continued daily till Saturday. The sections into which the proceedings of the Congress were divided were: Veterinary Police, Biological, Pathological, Tropical, and under the various sub-sections of one or other of these heads no fewer than 65 papers were read. It was manifestly impossible for any single individual to read all these papers, far less attend and hear the discussions upon them. And in some quarters one could hear an audible remark that the proceedings if anything covered too wide a ground and included subjects such as the economic bedding of horses, which one would scarcely expect to come within the purview of an International Veterinary Congress.

The British representatives seemed to devote their attentlon chiefly to the subject of Tuberculosis in one or other of its aspects, to the consideration of various tropical diseases, and to the prophylaxis of Swine-fever. In connection with Tuberculosis it is satisfactory to record that in a meeting where the majority belonged to the German speaking race the opinion was recorded by an overwhelming majority that Koch's view with respect to the duality of tuberculosis was not supported by faets, and that in the opinion of the meeting there is only one tuberculosis of man and animal, varying, no doubt, under different circumstances in intensity,

but frequently capable of transmission from one species to the other. On the whole, the Congress, while recognising the work that Koch had done in years gone by, was distinctly antagonistic to his more recent work, and this was markedly illustrated by an animated discussion in connection with his work in South Africa, which was strongly condemned by several speakers. In this discussion several English delegates took a prominent part, Professor M'Fadyean, Stockman, Woollatt, Dr. Theiler, and others contributing valuable speeches, and all recording their inability to support Koch's view, indeed Messrs. Stockman and Woollatt, and Dr. Theiler were strongly antagonistic, and cited practical experience in the field in support of their contentions.

On the question of the prevention and the stamping-out of swine-fever the majority of members seemed of opinion that the only prophylactic measure likely to be successful, and therefore worthy of consideration, is to be looked for in protective inoculation, and they cited English statistics—which were all several years old—to prove the failure of stamping out.

Honour to Bang.

Our English readers will be glad to know that the meeting passed a unanimous vote of appreciation at the success which had followed the work of Bang in the eradication of tuberculosis from infected herds. I need scarcely say that this honour to Bang met with the very warm approbation of every English speaking veterinary surgeon present.

We are also glad to record that Prof. M'Fadyean was elected to the permanent Council of the Congress as representative for Great Britain, and Dr. Pearson as representative for America.

Next Meeting.

It was resolved to hold next meeting of the Congress at the Hague in 1909—two years earlier than usual, so that another meeting could be held in its jubilee year in 1913. We are sure that the English veterinary surgeons one and all will be very glad to know that it was resolved to hold the jubilee meeting in London. This is partly due to the fact that a meeting in London is now due, and partly out of compliment to the memory of Gamgee, as it was chiefly through his instrumentality the International Veterinary Congress was inaugurated.

Several members took the opportunity on the way to and from the Congress to visit various places of interest—including veterinary schools, slaughter-horses, Hungarian horse-breeding establishments, dairies, serum stations, etc. At some of the veterinary schools they were particularly interested to notice the efforts that are being made to, as far as possible, perform operations under aseptic precautions. They were also much impressed by the fine collection of stuffed domestic animals illustrating the different breeds met with, and the very fine collection of anatomical preparations. In one or two instances these collections far surpass anything we have seen at any of the British schools, and we wish we could see any of our schools with such a collection as we saw at the comparatively small but up-to-date school at Stuttgart.

The language question at Budapest meeting presented greater difficulty to the English section, and in all probability to others, than at Baden, inasmuch as no recognised interpreters were employed to translate the gist of important speeches or resolutions to the members, and this office was left in a haphazard way to be undertaken by any good linguist willing to do the needful. In this respect the English section were under a marked debt of obligation to Dr. Theiler, who in the subjects in which the English section were interested translated French and German speeches into English and vice versa. At Baden it will be remembered official interpreters were arranged for, and it is to be hoped that at future Congresses the Baden precedent will be followed.

I have purposely left the papers and the discussions out of review in these remarks, as the whole of the papers and the discussions thereon will be officially contributed in due time.

Meat Inspection and Slaughter-Houses.

At many of the Continental slaughter-houses the inspection of meat is on what seems to us an ideal basis. Every carcase and its offal has to be submitted for inspection, after which it is stamped as passed, or to be cooked and rendered innocuous in accordance with the Friebank system, or to be totally destroyed as the case may be. The staff to carry out such an inspection efficiently is considerable, *e.g.*, at Munich there are 13 inspectors—a chief and a staff of 12 assistant veterinary inspectors. If any one proposed such a thorough system of inspection in England the authorities would simply be aghast. At the same time we must say that while meat inspection on the Continent is distinctly in advance of that in England there is unmistakably, if one may judge from what one saw, greater necessity for inspection there than with us. Thus, while tuberculosis is as rife with them as here parasitic diseases seem to be much more common. At Stuttgart we saw 3 ox carcases out of 30 inspected condemned for measles; and at Munich we were informed that out of 400 cattle killed each week an average of 10 cases were seized for measles. Now, to an Englishman this seems an extraordinary state of affairs. No case of measles in cattle has been seen at our Birmingham slaughter houses for 10 years, and the writer, after 30 years practice, has to confess that he has never seen a case of this in England.

The prevalence of such a disease in Germany to the extent observed implies grave radical sanitary defects in the rural districts, as well as the not uncommon practice of many of the inhabitants eating raw or imperfectly cooked meat.

Recently the Bishop of Birmingham, following the report of the Brassworkers deputation, eulogised German cookery at the expense of English, asserting that meat and food generally was much better cooked there than here. When I read his remarks I could not help thinking that some facts were in existence which, if interpreted, would put a very different view of the case to that given by the

Bishop. It is a fact that England has rid itself of such loathesome diseases by good sanitation and good cooking, whereas notwithstanding the recent eulogy, these diseases exist in Germany to an almost incredible extent, in spite of their fine system of meat inspection.

While at Budapest the opportunity was taken to visit the Veterinary College, the Bacteriological Institute connected therewith, the Central Market Hall, the pig feeding establishment at Köbánya, and the Abattoirs. The Budapest Veterinary College and its Bacteriological Institution are apparently thoroughly up-to-date, but call for no special comment.

The pig feeding establishment at Köbánya is too extraordinary to pass without remark. This we understand is a Government Establishment. There is a Chief Veterinary Officer (Herr Lutz) who very kindly conducted us over the establishment, and there are three veterinary assistants. At the time of our visit 31,000 pigs were being fattened. They are usually purchased from dealers, who buy them throughout Hungary and Servia, 24,000 were said to be Hungarian and 7,000 Servian. Some time ago the number was very much greater, but a recent severe outbreak of swine fever has caused a material reduction. The pigs are of very good quality. They have thick, curly, almost woolly coats, long noses, broad backs, are of medium length of body, and stand on good, sound, and somewhat long legs. When they arrive they are put in quarantine for a week. After this all are inspected for measles, each pig being cast, the tongue pulled sufficiently out to enable the Inspector to thoroughly examine it—particularly at its base—and so prevalent is measles in these pigs that 3 per cent. are actually detected at this inspection and are at once killed. Those which pass the inspection are drafted into the feeding establishment for fattening. The pigs are 18 months to 2 years old when bought, and they are fed for about six months and then slaughtered. They are housed in pens containing 100 to 150 each, and it is the work of one man to feed a penful and cleanse the pens. Half the shed is covered by a comparatively low roofed shed, and bedded with sand, which is very plentiful here. The outer half of the pen is an open yard paved with bricks or with concrete. At one corner of this paved yard is a bath about 2 feet deep and about 12 feet square kept filled with water, where the pigs bathe at will. The paved yard is thoroughly cleansed twice a day, and the sand under the shed changed once a month. The pigs are fed twice a day, once with whole maize, which is simply thrown down on the paved floor, the second time with meal (mostly maize and barley mixed) made into a kind of gruel with cold water. Occasionally in very cold weather hot water may be used, but this is not a usual practice. The supply of pigs is kept going regularly, a certain number being bought in and sold out each week. At the Budapest slaughterhouse the practice is, after the pigs are scraped and hung up, to skin their carcases, removing at the same time all subcutaneous fat. The feeding establishment and the extensive pig slaughterhouse left the impression upon us that this is one of the great centres of the European pig trade.

At the slaughterhouse we were informed that seven Veterinary Inspectors were employed examining pigs and seven examining cattle. The cattle market here is most extensive. On Thursday morning, Sept. 7th, there was at least 5,000 cattle, inclusive of several hundred buffaloes, in the market. To see these entering the market tied 4, 6, or 8 in a lot and led by a man like so many docile horses presents a sight not readily forgotten.

On Saturday, Sept. 9th, on the termination of the Congress, Miss Cust and Messrs. Stockman, Hobday, and Malcolm joined the No. 1 excursion to the Royal Hungarian Estates and horse breeding establishments at Kisber and Babolna, and to the Estate and Dairy farms of the Archduc of Magyar-Ovar. This excursion proved intensely interesting, and we one and all enjoyed it thoroughly. The Kisber breeding establishment was founded in 1853. At present they are making strenuous efforts to improve the Hungarian breed of horses by crossing that breed with thoroughbred English racehorses. On the whole the effort seems to be meeting with a considerable success, and if persevered in can scarcely fail to materially and beneficially modify the Hungarian breed. The cattle at Kisber are of the large boned, somewhat rugged, Simmenthal and Bonyhad breeds, both more suitable for work oxen than for the production of fine quality beef. Many of them, especially the work oxen, have very long horns. All farm work seems to be done by oxen here, the horses being reserved for riding and for carriage work.

The Hungarian sheep look wretched specimens to an Englishman, but the pigs, except a few forlorn, wretched looking, imported Tamworths, looked excellent specimens.

The visit to Babolna was even more interesting than the Kisber visit. At Babolna we had the pleasure and privilege of seeing an Arab stud of some 800 horses, counting old and young, almost every one of which was a model of its kind, and never have I seen such perfect command over so many animals as was displayed by the Commandant at Babolna. He is an Arab, a real lover of horses and loved by the horses, and is unquestionably a first-class judge of stock, for only a first-class judge could have put such a magnificent stud together.

At the Archduc Magyar-Ovar's establishment at Hegyeshalom we had the opportunity of viewing a very fine herd numbering altogether about 5,000 dairy cows and young stock. Some four or five years ago a vast majority of this herd was tuberculous. By following Bang's advice tuberculosis has been almost eliminated from the young stock, and it is confidently anticipated that, by continuing Bang's method, in a comparatively short period the herd will be entirely freed from tuberculosis. The milk of this herd of dairy cows is sent twice a day to Vienna, and the establishment is conducted on strict business lines. The cow sheds in many respects are the finest I have seen. The walls have glazed brick half way up, the floors are impervious

to wet, the ventilation and drainage is perfect, and the cows are liberally supplied with clean straw; in fact I have never seen cows cleaner or better kept, not even a single cow showing any trace of soiled hips or udders. And as was evident to any practical man, the condition of the hair clearly showed that cleanliness was a constant condition, and not a special effort of the attendants for this occasion. We cannot find words to say how much we have to thank the various officials and the staff generally at the Royal breeding establishments and the Archduc Magyar-Ovar's establishments for all their courtesy and kindness, and for the immense pains they took to make our visit instructive and enjoyable.

On our return journey we were much interested by a visit to the Serum Station at Höchst, near Frankfort. The Serum Station here is a department attached to an enormous wholesale chemical manufactory, with an array of doctors of science and other scientifically trained men in charge of the various departments that explains pretty well the wonderful advance made in Germany during recent years in the manufactory of commercial goods depending upon scientific and chemical processes. At this serum station one of the chief products is tuberculin. Here tuberculin is produced in such enormous quantities as to cause one to wonder where the field can possibly be to utilise such an output. But as the establishment is conducted solely on commercial principles we may rest assured there is a demand equal to the supply, otherwise the supply would not be there. Anti-diphtheritic serum also seems to be produced in large quantities, and besides these, which seem to be the two chief products, they supply mallein, and the various sera used in human and veterinary medicine. As the superintendent very obligingly conducted us over the whole station I need scarcely say the visit proved a very interesting and instructive one, and thus we practically terminated one of the finest educative holidays it has been my privilege to enjoy.

A DELEGATE.

VALVULAR DISEASE IN THE COW'S HEART.

The subject was a Friesland cow, cast from the herd of the Government Agricultural College in September, 1904, on account of her emaciated condition, the cause of which was surmised to be fluke.

She was purchased by a neighbouring farmer, under whose care her condition improved, and she calved in July, 1905.

I was called in to see her on July 9th, 1905, and found her suffering from pneumonia complicated with hydro-thorax; and noticed when auscultating the chest that the heart beats were regular and strong, but unfortunately did not sound the heart.

She was found dead early on the morning of the 13th inst. The subsequent post-mortem examination revealing ascites, hydro-thorax (about eight gallons), pneumonia, congestion, and cirrhosis of the liver due to fluke, and extensive valvular disease of the right side of the heart.

Microscopic examination of the valvular lesions made by Mr. Robertson, Government Bacteriologist, showed that they consisted "entirely of leucocytes in a fine meshwork of inflammatory tissue and fibrin." There are a few cocci in the deeper structures of the growth, but no trace of tuberculosis."

The accompanying photograph shows the right side of the heart laid open exposing the right auricle and ventricle, the normal site of the valves being occupied by the growths.

R. PAINE, M.R.C.V.S.

Veterinary Branch, Dept. of Agriculture,
Cape Town, August 26th.

BOMBAY VETERINARY COLLEGE.

The Bombay Veterinary College is doing very useful work judging from the report which the Principal has submitted to the Director of Public Instruction. Graduates of the institution are in demand not only all over the Presidency, but in Baroda, Madras, the Central Provinces, in the Federated Malay States and in North Borneo. Opportunities for their employment are expected to improve, as the Government of India have urged on local Governments the necessity of increasing the subordinate veterinary staff at a far more rapid rate than hitherto, and local bodies are to be asked to increase their staff so that at no distant date a Veterinary Assistant may be found in every taluk in India. A Conference was arranged last year to settle certain questions that had been raised in connection with the working of the College, and it recommended the abolition of the Salutri class and the gradual location of the residential and educational buildings of the College on a site in the grounds of Parel Government House. As a result of a visit to the Punjab Veterinary College, which the Principal undertook under the orders of Government, several improvements have been suggested by him, comprising scholarships to students and the establishment of a class for training farriers, which are calculated to further enhance the utility of the institution. Government have sanctioned Rs. 7,000 for the purchase of models and instruments for the Museum and Pharmacy attached to the College. They have also asked the sanction of the Secretary of State for an appointment of Professor of Bovine Pathology, which has been added to the staff of the College.—*Times of India.*

ABSTRACTS FROM FOREIGN JOURNALS.

The Toxic Action of Intestinal Worms.

Owing to recent controversy, Jammes and Mandoul have been making researches and have come to these conclusions :—

1. That the hosts of worms seldom show symptoms of any special poison and there seems to be none that can be extracted from worms, so that the occasional symptoms observed can hardly be attributed to the worms.

2. Their mechanical action is quite sufficient to cause the symptoms noticed and these are due solely to that. The number, seat, method of nutrition and character of the worms has a great influence, but the idiosyncracy of the host has as much to do with it as anything.

In the case of the ascarides there is a volatile substance that has an action on the mucus.

Worms are probably only the exciting causes of diseases that would have been more or less undeveloped if the system had not been upset by the worms.—*Rev. Vét.*

F.E.P.

THE VETERINARY MEDICAL ASSOCIATION OF IRELAND.

(Concluded from page 211.)

NOTES ON TWO SURGICAL AREAS IN THE HORSE—Plantar Nerves: Facial Sinuses.

By J. F. Craig, M.R.C.V.S., Professor, Ryl. Vety. Coll., Dublin.

In the practice of surgery one cannot become too familiar with the operation areas, the structures to be found in them, their relations and the variations in the position of these structures which not infrequently occur. This knowledge must needs be one of the qualifications of the good surgeon. Unless the veterinarian is perfectly conversant with regional anatomy, it cannot be expected that he will meet with uniform success in carrying out the operations which he may have to perform. No doubt the other great factor which contributes to the success of the operator is the employment of aseptic or antiseptic methods in the performance of his operations, but this latter part of the work ought not in any way to minimise his idea of the importance of a knowledge of the position and relationship of the structures with which he has to deal.

Plantar Nerves.

One of the most common surgical areas in the horse is the region occupied by the plantar nerves. This area is the subject of an operation for the section and removal of part of the nerve. The operation which involves only section of the plantar nerve is called plantar neurotomy but when portion of the nerve is also dissected out, it receives the name of plantar neurectomy. Sometimes this operation is given the further title of high plantar neurectomy. This operation is performed in cases where it is considered necessary to remove the whole of the sensation from that portion of the limb below the fetlock on the side to be operated on. This necessity arises in chronic lameness, which is, no doubt, due to some disease of the leg below the fetlock joint and on account of which the patient has already been submitted to other forms of treatment ; but all to no purpose. In such instances, the animals are quite useless, and it is only by resorting to the operation of neurectomy that they can be brought back to the service of man. By this means, the disease from which the animal suffers is not cured. Still the sensation of pain, one of the symptoms of the disease, is removed and the lameness produced by it taken away. This removal of lameness would occur only when the lameness is not due to mechanical causes.

If the operation of plantar neurectomy is properly performed on both sides of the leg, all the sensation should disappear from the limb below the fetlock, and if pain in any part of this region were the cause of the lameness, then the animal will at once become sound. From a careful survey of the operation area and the examination of a very large number of limbs at the seat of section of the plantar nerve I have been led to believe that unless great attention be paid to the point at which the operation is performed, the whole of the plantar nerves will not be cut through, and the results expected will not be uniformly obtained.

Position of the Plantar Nerves.—There are two plantar nerves for each limb, situated in the metacarpal region of the fore-limb, in the metatarsal region of the hind limb. These are the nerves which carry the sensory nerve supply of the leg below the fetlock. They are distinguished as internal and external, according to the side to which they belong. The position and relationships of the nerves are to some extent different in the fore and hind limb. On that account it is convenient to describe the plantar nerves of the fore limb separately from those of the hind limb.

Fore Limb.—The plantar nerves of the fore-limb begin above the knee and descend behind that joint through the carpal sheath, thence through the metacarpas, and terminate near the fetlock. The internal plantar nerve is the continuation of the median nerve ; the external plantar nerve is formed by the junction of the ulnar with a branch from the median. In their course these nerves give off small lateral branches to supply the neighbouring tendons and ligaments and the overlying skin, and just before their termination send some small twigs to the fetlock. The nerve supply to the limb below the fetlock is carried by the terminal branches of the plantar nerves. Besides the small lateral branches above mentioned, the plantar nerve detaches one exceptionally large branch. This is really a branch of communication between the internal and external nerves. A little below the carpus, the internal plantar nerve gives off an oblique branch which passes downwards and outwards behind the flexor tendons to join the external plantar nerve a little above the fetlock. If the surgeon overlooks this branch of the plantar nerve, he will run the risk, in performing the operation of plantar neurectomy, of permitting a certain amount of nerve supply to be retained by the limb below the fetlock.

There are three considerations to be taken into account when selecting a spot for section and excision of part of the plantar nerves. 1. The most superficial point at which the operation can be performed. 2. The point of junction and detachment of the oblique nerve. 3. The point of termination of the parent nerve.

The most superficial part of the plantar nerve is that which is placed in the lower half of the metacarpus. In the upper portion of the latter region it is partly covered by the fibrous sheath which extends downward from the knee and near its origin it is deeply situated in the carpal sheath. It is, therefore, in the lower portion of the metacarpus that it is most convenient to operate on the plantar nerves, and as it happens, this position in no way interferes with the other two considerations which are stated above. These latter problems are solved when

we have mapped out the area including the nerve above the point at which it terminates and below the point of junction or detachment of the oblique branch.

This area must be ascertained in the undissected limb by paying attention to certain guide lines, definite anatomical prominences, which can at least be felt on manipulation. In the observations which I have made I have taken the button of the splint bone as one of the guide lines and from it have taken measurements as to the points of detachment or junction of the oblique branch and also as to the points of termination of the plantar nerves. The button of the splint bone is a small nodular enlargement at the lower extremity of each small metacarpal bone. It will be found in the lower third of the metacarpus (one on either side) on the postero lateral aspect of the large metacarpal bone and standing out from the latter bone. The "button" can be made to spring under pressure of the finger because of the interval between it and the large metacarpal bone. In "clean" legs this bony nodule can easily be felt. In "gummy" legs it requires some searching for. However, even then, the search is worth making and is usually successful. One may then find it by examining for subcutaneous bone. The large metacarpal bone with the small metacarpals form the great portion of the thickness of the metacarpus. It is for the most part in front and at the sides subcutaneous in position. When therefore the posterior line of subcutaneous bone is examined from above to below, even in a "gummy" leg, at least a sudden outcut is noticed in the lower third of the metacarpus. That notch marks the lower extremity of the small metacarpal bone, and therefore the position of the button.

Other points which have been taken as guide lines to mark the position of the plantar nerves at the seat of plantar neurectomy are the fetlock joint and the sesamoid bones. Thus the plantar nerves have been spoken of as terminating near the most prominent point of the fetlock joint. Now this most prominent point of the fetlock, I take it, is the one at which the fetlock is broadest, when looked at from the front. This point, however, is so indefinite that accurate measurements cannot be taken from it. The same objection applies to the choice of the sesamoid bones as points from which the site of plantar neurectomy may be ascertained. In the undissected limb the sesamoids can be mapped out, but their outline is not very clear, and therefore a selection of these as constant anatomical points for the guidance of the operator would not be a very satisfactory one. The button of the splint bone is free from these objections, and, therefore, of greater value for the purpose.

The measurements which I took were made not from these nodules directly, but from the level of the buttons, and were vertical in direction. It is important to note this because the plantar nerves are situated some distance behind the small metacarpal bone. Here again the measurements were made when the limb was in a state of extension, the condition recommended during the operation of neurectomy. One must, therefore, refer to other guide lines for locating the nerve.

On examining the metacarpus, we find behind the large metacarpal bones the suspensory ligament, the lateral borders of which become prominent towards the fetlock and stand out from the back of this bone. Behind the suspensory ligament the flexor tendons are situated. These tendons form the cordlike posterior border of the metacarpus. Now the plantar nerves descend vertically in the limb along the antero lateral aspect of those tendons, and more particularly the flexor perforans tendon.

The external plantar nerve is related in front to the external metacarpal vein which runs alongside. The internal plantar nerve is separated from the internal metacarpal vein by the large metacarpal artery from the carpus as far down as the level of the button of the splint bone. Here again, the nerve is placed posteriorly. Reaching the level of the button of the splint bones the large metacarpal artery sinks more deeply between the flexor tendons and the suspensory ligament. Hence just below this point the internal metacarpal vein and nerve are in contact. A little further down there appears again an artery between the vein and nerve. Occasionally this artery places itself at first in front of the vein, before it takes up its position between the vein and nerve. This artery is the digital artery, one of the terminal branches of the large metacarpal artery. At the side of the fetlock, the relationships are the same for both sides of the limb. At the side of the fetlock in the undissected limb or living animal the artery and nerve, or its posterior digital branch, can be rolled under the finger and in some cases by this means the nerve, which is the more posterior, can be traced as far upwards as the button of the splint bone. But above this point the nerve or artery cannot usually be felt on manipulation.

Besides, in the "gummy leg" the suspensory ligament cannot be mapped out, and the artery and nerve cannot be felt when the side of the fetlock joint is examined in the living animal. In that case one must rely in cutting down upon the nerve by paying attention to the flexor tendons at their anterior border.

The plantar nerve, metacarpal vein, and large metacarpal or digital artery are subcutaneous in position. As a rule, the vein and nerve are more superficial than the artery and therefore are the first to be met with in a dissection. In an operation, on that account the vein or nerve are more easily brought to the surface of the wound with the tenaculum than is the case with the artery.

Although these structures are situated directly under the skin, it is only in very finely bred animals that very slight dissection is required to expose these structures after the skin is incised. In the legs of cart horses, and in "gummy legs" especially, the vessels and nerves are surrounded by a great deal of connective tissue which it is necessary to remove before the above mentioned structures can be clearly shown up.

Sometimes the plantar nerve is crossed superficially by a small vein passing from near the ergot to join the metacarpal vein a little below the level of the button of the splint bone.

About the latter point there is situated more deeply than the plantar nerve a portion of the sesamoidean sheath. This sheath is a synovial theca which facilitates the gliding of the flexor tendons behind the fetlock. Above the joint it sends a cul de sac upwards for a distance of two or three inches. This sac is unsupported at the sides between the suspensory ligament and flexor tendons, and on it rests to a slight extent the plantar nerve. If the sesamoidean sheath is filled with fluid it bulges outwards at its upper portion, especially at the point where it is not supported. This swelling obscures to some degree the plantar nerve, and unless care be taken in a dissection of the nerve at this part under such circumstances, the synovial sheath will run a great danger of being opened.

Points of termination of the plantar nerves of the fore limb in relation to the buttons of the splint bones.—The plantar nerves break up ultimately into three branches called the digital nerves, distinguished as anterior, middle and posterior. Of these the anterior and posterior are the largest and most important. The middle digital nerve is small and irregular in its origin, sometimes being detached from the anterior, sometimes from the posterior digital nerves, and at other times formed by the junction of twigs from both anterior and posterior digital nerves. The posterior digital nerve continues the course of the plantar nerve. The anterior digital nerve passes at once forwards and downwards from its point of origin over the digital artery and vein,

occasionally under the vein. I therefore examined for the points of separation of the anterior and posterior digital nerves as the termination of the plantar nerve.

In all I kept a record of the terminations of 84 plantar nerves of the fore limb of the horse. Half this number was made up of internal plantar nerves, the other half of external plantar nerves. Again one half belonged to near fore limbs, the other half to off fore limbs. The animals used in this connection were for the most part ordinary dissection subjects, varying from about 14·3 to 16 hands high. One of the subjects was about 17·2 hands high, and another, an American trotter, about 16 hands high.

In all those cases, with one exception, the plantar nerves terminated below the level of the button of the splint bone. This exception occurred in the external plantar nerve of the off fore limb belonging to a half-bred mare about 15 hands high. Here the nerve ended directly opposite to the button of the external small metacarpal bone. The internal plantar nerve of the same leg ended half-inch below the level of button of the internal small metacarpal bone. The external plantar nerve of the near fore leg of the same animal terminated ¾ inch below the level of the button of the external small metacarpal bone.

The distance between the level of button of the splint bone and the termination of the plantar nerve varied not only in different animals, but also in individuals, and even in the same leg. Only in six limbs examined was the distance the same for both internal and external plantar nerves, and in two of those cases the fore limbs belonged to the same animal. The mean length of plantar nerve below level of button of the splint bone was 1·3 inches. The extreme length which occurred only in one instance was 2¾ inches, and that in connection with the external plantar nerves. The mean distance in the case of the internal plantar nerve was 1·39 inches. The mean distance in the case of the external plantar nerve was 1·21 inches.

The variations which occurred in the length of the plantar nerves below the level of the button of the splint bones did not appear to depend upon the height or breed of the animal. In the gelding 17·2 hands high, the internal plantar nerve of the near fore limb terminated 3-8 inch below the level of the button of the internal splint bone, the external plantar nerve of the same limb ¼ inch below the button of the external splint bone. In the off fore limb of the same gelding the external and internal plantar nerves ended ¾ inch below the lower extremities of their respective splint bones. In the case of the American trotter, the internal and external plantar nerves of the off fore limb terminated 1½ inches below the buttons of the splint bones. In the near fore limb the internal plantar nerve ended 1½ inches from a similar point, and the external plantar nerve about 1¾ inches from the same point on its own side.

Oblique Branch.—Point of Detachment from Internal Plantar Nerve.—This point is so high up in the limb near the carpus that it is never likely to cause any trouble to the surgeon when he is performing high plantar neurectomy. The mean point at which the oblique branch was detached from the internal plantar nerve was 3½ inches above the level of the button of the internal splint bone. The greatest distance from the button was 4½ inches and the shortest 2¾ inches. In the near fore limb of the gelding 17·2 hands high, the distance of the point of detachment for the off fore limb was 4½ inches, for the near fore limb four inches.

Point of Junction of Oblique Branch with External Plantar Nerve.—The oblique branch joins the external plantar nerve at a much lower level than the point at which it is given off from the internal plantar nerve. That is due to the obliquity of its course. Its direction can be traced even in the undissected limb of a well bred, clean legged animal by examining the metacarpus with the hand along the flexor tendons. The oblique branch can then easily be felt under the skin.

In all cases examined, with but one exception, the oblique branch joined the external plantar nerve above the button of the splint bone. That exception occurred in the near fore limb of a brown mare about 15·2 hands high. In it the point of junction of the oblique branch with the external plantar nerve took place directly opposite to the button of the external small metacarpal bone. In the off fore limb of the same animal the oblique branch joined the external plantar nerve 1 inch above the button. In the other cases the oblique nerve fused with the external plantar at points above the button of the splint bone varying from ½ to 1¾ inch. The average distance at which this junction occurred above the lower extremity of the external small metacarpal bone was 1 1-8th inches. The extreme distance was 1¾ inches. In the off fore limb of the gelding 17·2 hands high, the length was 1½ inches above the button, in the near fore limb 2 inches.

Seat of High Plantar Neurectomy in the Fore Limb.—From what has already been pointed out, it ought to be evident that the greatest care in choosing the site of the operation should be taken of the external plantar nerve. Even there in the average case 2½ inches intervened between the point of junction of oblique nerve and the termination of the external plantar nerve. The shortest distance was 1½ inches, and that occurred in two instances. One of these appeared in the specimen which I noted as having the oblique branch joining the external plantar nerve opposite the button of the splint bone. The greatest distance was 4 inches.

The incision should be made ¾ to 1 inch in length vertically along the antero-lateral aspect of the flexor tendons, and the upper extremity of the incision should be placed opposite to the button of the external splint bone.

On the inner side the incision may be made at the same level, the upper extremity of it being placed opposite the button of the internal small metacarpal bone. But in the internal plantar nerve a greater freedom can be taken in the choice of operation area without interfering with the success of the operation. In no case was the oblique nerve detached from the internal plantar below 2¾ inches above the button of the splint bone. On that account it is permissible to make the incision for the internal plantar nerve higher up than for the external plantar nerve. If this is done, the operation will avoid more completely the danger of opening into the synovial sesamoidean sheath.

So far as relationships go, if the operation is done at the same level on either side, *i.e.* below the button of the splint bones, the same precautions have to be taken.

Here one must avoid the metacarpal vein, digital artery, sesamoidean sheath and sometimes the small vein which passes from the ergot over the plantar nerve to join the metacarpal vein of its own side.

If the operation be done a little higher up on the inner side, just above the button of the splint bone, then one must be careful of the internal metacarpal vein and the large metacarpal artery.

Position of the plantar nerves in the hind limb.—The plantar nerves in the hind limb begin above the hock, as the terminal branches of the posterior tibial nerves, and they extend downwards through the tarsal sheath behind the hock and through the metatarsus to terminate near the fetlock as in the fore limb. In their position and relationships the plantar nerves of the hind limb differ from those of the fore limb in the following ways. There is no artery corresponding to the large metacarpal artery of the fore limb related to the plantar nerves of the hind limb. The large metatarsal artery is placed further forward than the nerve and on the

outer side of the metatarsus between the large and small metatarsal bones. Each nerve is related in front to a metatarsal vein (external or internal). Sometimes between the nerve and the vein, sometimes behind the nerve and alongside it, runs a very small artery, an unnamed branch of the tarsal arch. This artery extends from the hock to near the lower third of the metatarsus. In other respects the nerves of the fore and hind limbs are exactly alike. Below the button of the splint bone the plantar nerve of either side is related to the digital in front and separated by that artery from the metatarsal vein. The button of the splint bone is not so prominent in the hind limb as in the fore limb.

Point of termination of the plantar nerves of the hind limb.—These observations were carried out in 84 cases and the nerves examined belonged to the same animals as those in which the nerves of the fore limb were noted. Here again, as in the fore limb, the button of the splint bone was taken as the constant point from which measurements were made. In all cases without exception the plantar nerves of the hind limb terminated below the level of the button of the splint bone. The shortest distance below the latter point at which this occurred was ¼ inch. The longest distance was 4 inches, appearing in a gelding about 15 hands high. The average distance for all plantar nerves in the hind limb was 2·12 inches, for internal plantar nerves 1·94 inches, and for external plantar nerves 2·3 inches. In the gelding 17·2 hands high, the internal plantar nerve of the near hind limb terminated ¼ inch below the button of the internal splint bone, the internal plantar nerve of off hind limb 1½ inches below the button, and the external plantar nerves of both hind limbs 1 inch below the lower extremities of external small metatarsal b nes. In the American trotter, the termination of both plantar nerves of off hind limb occurred ½ inch below the button of the splint bone; in the near hind limb the termination of internal plantar nerve appeared 2¾ inches; and of the external plantar nerve 3 inches below the button of the splint bone.

Oblique branch.—Just as in the case of the plantar nerves of the fore limb, the plantar nerves of the hind limb communicate by means of a branch which crosses from the internal to the external plantar nerve behind the flexor tendons. This branch, the oblique branch, is not so constant as in the fore limb. In seven of the hind limbs examined no trace of an oblique branch could be fou d.

Point of detachment of the oblique branch from the internal plantar nerve.—In extreme cases the highest point of detachment occu red 4 inches above the button of the splint bone, and the lowest point 1½ inches. The average distance was 2⅓ inches above the lower extremity of internal small metatarsal bone.

Point of junction of oblique branch with the external plantar nerve.—In only one case in the hind limb did the fusion occur above the level of the button of the splint bone. In this instance the point of junction took place ½ inch above the button. In two specimens the oblique branch joined the external plantar nerve opposite the button of the splint bone, and in other cases the point of junction varied from ¼ inch to 1½ inches below the lower extremity of the small metatarsal bone. The average distance below the latter level was ½ inch.

Seat of operation in the hind limb.—In the hind limb as in the fore limb the greater care in the choice of the seat of operation requires to be taken of the external plantar nerve. In the cases which I noted the length of the external plantar nerve between the points of termination, and of junction of the oblique branch varied between ¼ inch and 3 inches. The shortest length occurred in the gelding 17·2 hands high. In this animal the oblique branch of the near hind limb joined the external plantar nerve ½ inch below the button of the splint bone.

In order to cover nearly all the variations which appear in connection with the plantar nerves and their branch, the upper extremity of the incision for the external plantar nerve should be made about ¼ inch below the button of the external small metatarsal bone and at the antero-lateral aspect of the flexor tendons. Thence the incision should be carried vertically downwards for 1¼ inches. The plantar nerve corresponding to this area should be completely excised. By this means at the top of the incision the extreme case in which the external plantar nerve ends ¼ inch below the button of the splint bone is met, and at the lower extremity the nerve supply of the oblique branch removed even if the oblique branch joins the external plantar nerve 1½ inches below the level of the button of the splint bone.

On the inner side, a little more latitude may be taken in selecting the seat of operation. So as to avoid any mishap to the sesamoidean sheath, the internal plantar nerve should be operated on opposite to or slightly above the button of the internal splint bone. This incision should be vertical in position along the antero-lateral aspect of the flexor tendons and ¾ to 1 inch in length.

For this operation on the hind limb the same precautions require to be taken as in the fore limbs, so far as they affect relationship. In operating on the internal plantar nerve, it must be remembered, that there is no large artery like the large metacarpal artery above the level of the button of the splint bone related to the nerve.

Posterior Digital Nerve (b).—Another operation area is one which includes the posterior digital nerve, the largest of the terminal branches of the plantar nerve. This area is the subject of an operation which comprises section and removal of a part of the posterior digital nerve. The operation is called posterior digital neurectomy, sometimes and more commonly low plantar neurectomy. It is performed when it is considered necessary to remove only part of the sensation from the limb below the fetlock. The condition in which it has been most frequently recommended and tried is navicular disease.

This nerve, the posterior digital nerve, begins as the continuation of the plantar nerve at a point varying between the level of the button of the splint bone and 4 inches below that point. It is the only terminal branch of the plantar nerve which is at all definite in its course, and therefore the only one which is commonly operated on. From its point of origin, this nerve descends along the anterior aspect of the flexor perforans tendon over the side of the fetlock and first and second phalanges. It passes to the inner side of the lateral cartilage, and ends within the wing of the os pedis. Its chief terminal twig is sent along with the pre-planter artery to reach the laminal surface of the os pedis, and the sensitive laminæ. Its principal lateral branches end in the flexor perforans tendon, the plantar cushion and navicular bursa. Sometimes it detaches the chief contribution to the formation of the middle digital nerve. The latter nerve is formed at points varying between the side of the fetlock and the middle the first phalanx.

About the middle of the os suffraginis the posterior digital nerve is crossed superficially downwards and forwards by the ligament of the ergot. This ligament is a glistening fibrous band passing from the ergot downwards to the side of the second phalanx. It may be mistaken for the nerve.

In front of the posterior digital nerve throughout its course is placed the digital artery. The vein is usually situated anterior to the artery, but occasionally it intervenes for a short distance between the nerve and the artery. Sometimes behind the nerve there ascends a small vein to join the digital vein near the fetlock.

The most convenient spot for the section of this nerve lies between the middle of the first phalanx, *i.e.*, above the ligament of the ergot and its point of origin. As

the point is so variable, the best site for the operation is just above the middle of the cs suffraginis.

The guide lines for this neurectomy are (1) the ergot, the horny callosity at the back of the fetlock. Immediately in front of the ergot is placed (2) a slight digital depression. This depression is formed in front of the ridge made by the latter border of the flexor tendon. If this depression is manipulated, one can, in very clean legs with thin skins, roll the digital artery and posterior digital nerve under the finger. After the skin is removed from this area, the nerve and artery will be found enclosed in a common thin sheath of connective tissue.

Operation incision.—M ke a vertical incision (hence obliquely across the direction of the pastern) about 1 inch in length at the level of the ergot and in the depression in front of the flexor tendons. The nerve lies directly underneath this point. Here the ligament of the ergot is avoided. In this operation there is little fear of the sesamoidean sheath being opened, as it is well protected by the flexor perforatus tendon and the reinforcing sheath of the flexor perforans.

Facial Sinuses.

Facial sinuses are large, irregular cavities formed in the bones of the skull and in direct or indirect communication with the nasal chambers. These sinuses are frequently operated on and opened, the operation being known as trephining. This operation is performed in cases of empyæma of the facial sinuses (nasal gleet), tumours and foreign bodies in the cavities, fractured or necrosed bone in connection with them, and in affections of the upper molar teeth.

Trephining of the antrum of Highmore (*i.e.* superior maxillary sinus) used to be carried out for the cure of glanders, but no one who has any knowledge of the subject would dream of adopting such a form of treatment nowadays if he knows the case to be one of glanders.

These sinuses are for the most part formed in the bones of the face, but some extend into the cranium. The cavities are divided up artificially into four pairs, the frontal, sphenoidal, superior maxillary, and inferior maxillary sinuses. The two latter pairs of sinuses have been spoken of also as the upper and lower divisions of the superior maxillary sinus respectively.

Sphenoidal sinuses are the smallest of the facial sinuses, and from the point of view of the surgeon the least important. They are placed at the back of the skull, and because of their deep position cannot be operated on. Each sinus is divided up into two portions, an upper or sphenoidal, and a lower or palatine. The upper portion is the smaller and is placed solely in the body of the presphenoid bone. It is divided up into loculi by imperfect partitions and separated from its fellow of the other side by a perforate septum. Inferiorly this division communicates by a narrow opening with the palatine portion. This palatine portion is bounded by the palatine, vomer and lateral mass of the ethmoid and opens freely below into the inner compartment of the superior maxillary sinus.

The other three pairs of sinuses are more easily reached from the outer side of the head, and on that account are of greater surgical interest.

Frontal sinuses are the second largest of the facial sinuses. They are situated towards the front of the face. They do not communicate directly with the nasal chamber, only indirectly through the superior maxillary sinus.

Each sinus extends upwards in front of the lower part of the cranial cavity. Its upper extremity is marked on the outer side by a line drawn between the upper borders of the supra orbital processes of the frontal bones. The breadth of the sinus is greatest near this point, and is about 2½ inches in the average animal. The inner boundary of the sinus is formed by an imperforate vertical septum in the frontal bone alone the middle line of face separating the two frontal sinuses and stretching from above downwards for about 3 or 4 inches. Thence it deviates slightly outwards and ends about 2 inches below that again. The lower portion of the inner boundary is made up of the anterior turbinated bone and separates the frontal sinus from the nasal chamber.

The lower extremity is the narrowest part of the sinus. It is situated about 3 inches below the nasal canthus and 3 to 3½ inches in front of the zygomatic ridge of the superior maxilla. It is placed a little above the level of the lower extremity of the latter prominence, and is bounded by the horizontal septum of the anterior turbinated bone.

The outer boundary of the sinus is more irregular than the inner. At its upper third it is curved, and about ½ inch in front of the inner half of the rim of the orbit. Beneath the rim of the orbit it stretches downwards and forwards from the nasal canthus in the direction of the nasal peak for a distance of about 3 inches. Here it marks the position of the osseous lachrymal canal. This boundary is formed in its middle third by a septum which passes between the lateral mass of the ethmoid and the lachrymal bone, and in its lower portion by the anterior turbinated bone.

The septum between the lateral mass of the ethmoid and the lachrymal bone is perforated by a large oval opening which permits of the communication between the frontal and superior maxillary sinuses. The opening is about two inches in its longest, its vertical diameter. Its lower limit is about 1 inch below the nasal canthus and 2 inches above the lower extremity of the frontal sinus. The posterior wall of the sinus is very irregular and is formed by the frontal bone, the lateral mass of the ethmoid and the anterior turbinated bone. From a point about 1 inch below the upper extremity of the sinus and extending downwards for a distance of about 2 inches, the lateral mass of the ethmoid projects into the sinus as an oval round body of bone, marked by the possession of longitudinal ridges. The greatest depth of the sinus is situated just below this mass and is about 2½ inches.

The anterior wall of the sinus is formed by the frontal, lachrymal and nasal bone. This bony anterior wall is for the most part subcutaneous in position, and only at the outer margin of its lower half is it covered by a portion of one of the facial muscles, the levator labii superior alaeque nasi.

The anterior wall of the sinus is only connected with the posterior wall through its borders except at one point. About 1½ inches from the upper extremity of the sinus a transverse horizontal plate of bone stretches between the anterior wall and the lateral mass of the ethmoid. The inner border of this plate is attached to the inner wall of the sinus.

Superior maxillary sinus is the largest of the facial sinuses. It is placed at the side of the face, and as its name implies, is bounded to a large extent by the superior maxillary bone. The other bones which bound it are the lachrymal (posterior half), malar, posterior turbinated bone and lateral mass of the ethmoid. It is imperfectly divided up into two compartments, an inner and an outer. The division is brought about by the presence of a distinct vertical ridge formed by the superior dental canal. The two compartments communicate freely in front of this ridge.

The inner compartment is the smaller. It communicates in front with the frontal sinus by the opening already referred to. It also opens above freely into the sphenoidal sinus, and a small curved, slit-like, vertical orifice appears immediately behind the opening into the frontal sinus for communication with the middle meatus of the nose.

The outer and larger compartment extends upwards into the maxillary protruberance at the upper extremity

of the superior maxillary bone. Downwards it reaches a point about 1½ to 2 inches above the lower extremity of the zygomatic ridge. Here it is separated by a transverse, thin, bony septum from the inferior maxillary sinus. The septum is perforate or may even be absent in donkeys. In horses Lanfiletti found it well developed in 52 out of 74 cases examined. The distance from the inferior extremity of the zygomatic ridge at which the septum is placed varies directly with the age of the animal.

The alveoli of the 6th and part of the 5th upper molar teeth project into the posterior wall of the sinus. In the young animal these alveoli almost entirely obliterate the cavity of the outer compartment. As the animal grows older the teeth are pushed out of the cavity and the sinus enlarges.

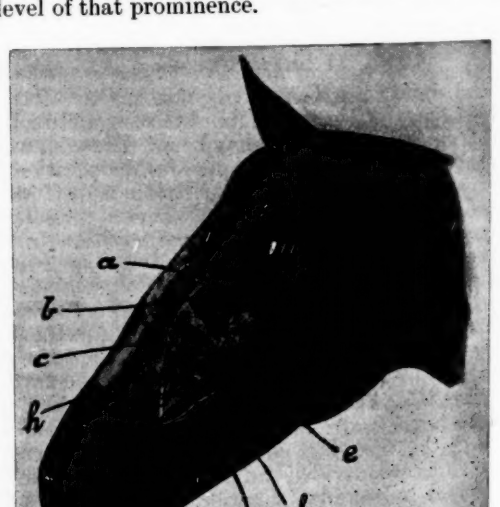
Showing (*a*) frontal sinus of near side exposed throughout its extent; (*b*) communication between frontal and superior maxillary sinus; (*c*) superior maxillary sinus; (*d*) inferior maxillary sinus.
1. Upper border of supra-orbital process. 2. Zygomatic ridge.

The part of the outer wall of the sinus, which can be easily reached for the purpose of operation, is mapped out as follows:—The upper border of the area stretches backwards from the nasal canthus to the zygomatic ridge. The posterior border extends along the zygomatic ridge from a point 1½ to 2 inches above its lower extremity to the level of the nasal canthus. The anterior border is marked by a line drawn for a distance of about 1½ inches downwards from the nasal canthus towards the nasal peak. This latter line marks the boundary between the frontal and superior maxillary sinuses. Behind the zygomatic ridge and above the level of the nasal canthus the sinus is covered by the very large masseter muscle. The sinus in the area which I have mapped out is superficial in position. Its outer wall is subcutaneous in front of the zygomatic ridge for the distance of about 1 to 2 inches. Anterior to this point the bone is covered by thin facial muscles, levator labii superioris alæque nasi and levator labii superioris proprius. A small vein, the angular vein, also crosses this area in its vertical course upwards from its origin, about ½ inch below and in front of the lower extremity of the zygomatic ridge towards the nasal canthus near which it terminates. The angular artery is placed about 1 inch in front of the vein and under the above mentioned muscles.

Inferior maxillary sinus is also situated in the superior maxillary bone. It is imperfectly divided up into two compartments by a continuation of the same canal as divides up the superior maxillary sinus.

The inner compartment is the smaller and communicates with the middle meatus of the nose by an opening common to the inner compartment of the superior maxillary sinus. The inner boundary of this division of the sinus is formed by the posterior turbinated bone.

The outer compartment is placed directly underneath the outer compartment of the superior maxillary sinus and separated from the latter by the septum already referred to. The upper extremity of the sinus is therefore 1½ to 2 inches above the lower extremity of the zygomatic ridge. The lower extremity is irregular in shape and disposition. The sinus seldom extends beyond 1 inch below the zygomatic ridge, and because of its irregularity it cannot with certainty be opened into below the level of that prominence.



Showing besides the above: (*e*) edge of masseter muscle; (*f*) submaxillary vein; (*g*) submaxillary artery and its branches; (*h*) levator labii superioris alæque nasi.

In the very young animal this compartment is largely filled with the alveoli of the 4th and parts of 5th and 3rd upper molar teeth.

Like all the other facial sinuses, the inferior maxillary sinus is very small in the young animal and increases in size with age. It is usually later than the other sinuses in attaining full development.

The outer wall of the sinus is superficial over the irregularly four sided area whose boundaries are the following:—The posterior border of the area coincides with the lower 1½ to 2 inches of the zygomatic ridge. The upper border is marked by a horizontal line, about 2 inches long, passing forward from the upper extremity of the posterior border. The anterior limit by a vertical line downwards from the anterior extremity of the upper border and on a line with the nasal canthus. The lower extremity is very irregular and never placed beyond one inch below the zygomatic ridge. For about 1 to 2 inches in front of the ridge in this area the bone is subcutaneous. Anterior to this line, the bone is covered by the two thin facial muscles already referred to.

The submaxillary vein crosses the direction of the zygomatic ridge about ½ inch below it and then divides on the bone ½ inch in front of it into the angular and nasal veins. The angular vein passes vertically upwards from the point over the area just mapped out.

The sub-maxillary artery is situated a little below the vein and crosses the line of zygomatic ridge about 1 inch below the latter point. It then passes under the sub-maxillary vein and divides under cover of one of the facial muscles. Its angular branch ascends under cover of that muscle from 2 to 3 inches in front of the zygomatic ridge towards the nasal canthus.

Sites of Operation on the facial sinuses.—In empyæma of the facial sinuses the mucous membranes which line the interior of these cavities are inflamed and the purulent exudate of the inflammation accumulates within the sinuses, because escape is prevented by the occlusion of the openings into the nasal chambers. These sinuses are therefore sometimes trephined in order to afford drainage for the exudate and to allow of their being injected out with various antiseptic fluids.

The sphenoidal and superior maxillary sinuses and portion of the frontal sinus can be drained and injected out from one trephine opening into the lower part of the superior maxillary sinus. That is due to the natural position of the horse's head. A dependent orifice is made for these sinuses if the superior maxillary sinus is opened at the lower portion of its outer compartment. The opening should therefore be made 1½ to 2 inches above the level of the lower extremity of the zygomatic ridge and ½ to 1 inch in front of it. Remember that 1½ to 2 inches above the extremity of the ridge means only to the lower border of the trephine opening and ½ to 1 inch in front of the ridge to the centre of that orifice. The exact point must be ascertained by referring to the age and size of the animal. The older and larger the animal, as a rule the higher up is the opening to be made. The only point to be noticed in making the incision is to take care of the facial muscles. The angular vein and artery are placed in front of the opening.

In young animals it is better to make the incision further forward than in the old animal, *i.e.*, 1 to 1½ inches in front of the zygomatic ridge so as to avoid injuring the alveoli of the molar teeth.

When the opening has been made it is usual also to open into the frontal sinus for convenience in injecting antiseptic fluids. The opening into the frontal sinus has been recommended at various points. Müller says—"The frontal bone is trephined at a point on a level with the supraorbital process of the frontal bone and about 1 inch from the middle line. At this point the frontal sinus is opened just below its upper extremity. Fleming says—"The opening may safely be made ½ inch or so above this line or as low as a horizontal line between the inner angle of each eye, though this involves the upper end of the nasal bone. The opening should be in the space between the frontal suture and the eye." In making an opening such as above recommended care must be taken not to trephine over the plate of bone situated about 1½ inches below the upper extremity of the sinus and extending for an inch outward from the middle line. This ledge above referred to joins the anterior wall of the sinus to the lateral mass of the ethmoid.

These openings, however, are not of very much service in empyæma.

To my mind a more important matter than convenience requires to be attended to in opening the frontal sinus, and that is drainage. Although the frontal sinus is in communication with the superior maxillary sinus, under ordinary conditions the opening in the wall of the superior maxillary sinus would not drain the whole of the frontal sinus for this reason—the frontal sinus extends downwards for 1½ to 2 inches below the level of the communicating orifice between the frontal and superior maxillary sinus. On that account the frontal sinus should be opened near its lower extremity rather than near its upper limit.

A good suggestion has lately been put forward by Siedmagrotzky with regard to this point. "He opens the frontal sinus about ½ to ¾ inch in front of a horizontal line drawn between the two inner angles of the eye, and 1¼ to 1½ inches from the middle line of the face. After washing out the sinus cavity he effects a communication between it and that of the nose by thrusting a director downwards and inwards at the deepest spot breaking through the thin plate of bone and the mucous membrane covering it and enlarging the opening so made by excising with a tenotome an oval fragment ¾ inch long and ⅜ inch wide." This operation is easily performed because, as I have already pointed out, the lower portion of the posterior wall and the floor of the sinus are formed by the very thin anterior turbinated bone which separates the sinus from the nasal chambers and can easily be punctured or broken through. The only drawback to this method of operating is the vascularity of the mucous membrane lining the turbinated bones. There is therefore a danger of profuse hæmorrhage resulting from the operation on these bones.

The other position in which trephining may be performed on the frontal sinus is near to its lower extremity. The point of operation is about 2½ inches below the nasal canthus and 1 inch in front of a line drawn from that canthus to the side of the nasal peak. The latter point can easily be felt in the living animal. In this area recommended for trephining the frontal sinus the bone is subcutaneous. Here a dependent orifice will have been made into the frontal sinus, and the other sinuses can be injected out from this orifice through the opening into the superior maxillary sinus. This seems to me to be the best point at which the frontal sinuses can be opened in empyæma.

If the inferior maxillary sinus is involved as well as those above mentioned, then it also must be opened. That this sinus is involved can be ascertained by exploratory puncture. The most convenient point at which this opening can be made is about ½ inch in front of the lower extremity of the zygomatic ridge. The lower boarder of the opening must be level with the end of the ridge. Here the bone is subcutaneous, but one must be careful not to injure the angular vein. In young animals the opening is better made a little further forward than the above point so as to avoid injuring the alveoli of the molar teeth. When all the facial sinuses are affected, this opening should be made instead of the opening into the superior maxillary sinus. Through this orifice a punch should be inserted to break down the septum between the superior and inferior maxillary sinuses, when the septum does exist.

If, later, the discharge does not pass from the maxillary sinus into the nasal chambers instead of through the outer trephine opening, a seton needle should be passed through the latter orifice over the superior dental canal to break down a portion of the posterior turbinated bone in order to make an artificial opening into the nasal cavity. This becomes necessary when the natural opening into the nasal chamber becomes closed.

In tumours and fractured bones the sinuses are trephined over the areas affected. The precautions to be taken depend altogether upon the seat of the disease. These can easily be understood by examining the descriptions I have already given. The trephine openings require in many cases to be much larger than those used in empyæma, and very frequently a large number of them fused together need to be made.

In diseased molar teeth, it is sometimes neccessary to remove them by punching them. This must be done in the case of the upper three molar teeth by trephining the maxillary sinuses.

For the uppermost molar tooth the superior maxillary requires to be opened about 1 inch above the point at which it is recommended in empyæma, and the opening requires to be larger.

For the 5th molar tooth the trephining opening should

be made as for empyæma and the punch placed close to the septum.

For the 4th molar tooth the inferior maxillary sinus must be opened, and at the point already noted.

Occasionally the 3rd tooth can be reached from this opening, but it is better to trephine for the purpose a little further down than recommended in the previous case.

Time did not permit of the second portion of the paper being read.

The PRESIDENT thanked Prof. Craig for his able and exhaustive paper. (App.)

Prof. WOOLDRIDGE suggested that the remaining portion of the paper might be read at the next meeting, and then both could be discussed together.

The PRESIDENT thought the paper should be printed in its entirety, and then let the whole matter be discussed as suggested. This was agreed to.

Prof. CRAIG thanked them very much for the reception they had given him that evening, especially as that was the first paper he had read before their Association.

Prof. WOOLDRIDGE proposed a vote of thanks to the President, which was carried with acclamation, and with this the meeting terminated.

CHARLES ALLEN, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting was held at the Grand Hotel, Manchester, on September 7th, the President, W. Packman, Esq., in the chair, and the attendance included Messrs. W. A. Taylor, Wolstenholme, Faulkner, Woods, S. Locke, Munro, Brittlebank, A. Lawson, Hopkins, Giblin, Stent, Prof. Williams, F. G. Edwards, Roberts, Ackroyd, Carter, Priestner, G. H. Locke, and W. S. Worthington. Visitors: Messrs. R. Price, J. Fraser, F. S. Warburton, and H. Ferguson.

Apologies for absence were received from Messrs. Abson, McKinna, Eaton Jones, Somers, Hughes, and Sumner.

Mr. TAYLOR asked that the Secretary should read the minutes of the last meeting in so far as they related to the ordinary business. This having been done he moved that the minutes be passed.

Mr. S. LOCKE seconded, and they were approved.

Mr. TAYLOR desired to know, as a matter arising out of the minutes, whether the Standing Committee had met.

The PRESIDENT replied in the negative.

Mr WOLSTENHOLME proposed that Mr. D. C. CAMPBELL, Manchester, be elected a member of their Association. He had known him for a number of years and had a favourable impression of his abilities.

Mr. FAULKNER said it gave him pleasure in seconding the proposal. Mr. Campbell was, at the present time, on their staff, and he (Mr. Faulkner) was delighted to see a desire to join the Association.

Mr. G. H. LOCKE drew attention to the fact that the election R.C.V.S. had taken place, and that they had obtained the entry into the Council of three gentlemen out of four.

Mr. WOLSTENHOLME wished to lay on the table the card of admission for the delegate of that Society at the Buda Pest National Veterinary Congress. If the delegates were ready he would hand over the ticket to them. He had been asked at the last meeting if any communication had been received from the Manchester University as to the donation made towards the equipment of the Public Health Laboratory. He had now pleasure in placing before them the formal receipt, and also letters from Prof. Delépine and Mr. Fiddes, Registrar of the University, both of whom expressed their appreciation of the gift.

THE THERAPEUTICS OF MERCURIC POTASSIUM IODIDE AND MERCURIC IODIDE.

By F. G. EDWARDS, F.R.C.V.S., Chester.

Mr. President and Gentlemen,—In mercuric iodide dissolved in an aqueous solution of potas iodid forming the double salt of mercuric potas iodid (formerly known as iodic hydrarg) we have a drug of more than ordinary therapeutic value, it exerts internally a specific effect, and that effect is an absorbent and resolvent one.

It is important our mercuric iodide should be pure, we have occasionally bought samples which have thrown down a dark brown sediment on adding a solution of potas iodid, this precipitate is not redissolved. The impure HgI_2 is usually of a dull salmon colour, in distinction to the bright vermilion of the pure salt.

Mercuric Potas. iodid is more quickly absorbed than any other salt of mercury, the presence of the iodine causes the complex albuminates formed in the stomach to be more quickly absorbed and excreted, $HgKI_2$ stimulates and is excreted by the kidneys, skin, liver, salivary mucous and lymph glands, and is supposed to prevent the formation of fibrin and arrest nutrition of the tissues, although I believe small doses improve the animal's condition.

Text books give us very little information concerning the therapeutics of $HgKI_2$ consequently much of the paper is taken from our own practical experience.

I was inclined to try its curative actions owing to the excellent results we had obtained in cases of lymphangitis. We have used this salt for the last few years in those cases in which we were in the habit of prescribing diuretics.

$HgKI_2$ is now used by many practitioners in the treatment of lymphangitis. We find little difference whether a dose of physic is given previously or not. It is especially of use in the treatment of this affection in poor conditioned animals. The usual dose is five grains of HgI_2 dissolved in a watery solution of Potas. iodid, given three times a day mixed with the food. Some veterinary surgeons give much larger doses than this; I believe it is occasionally prescribed in 20 grain or even greater doses. In lymphangitis I look upon $HgKI_2$ as a specific; very seldom, even in acute cases, is the patient longer than a week before it is sent to work.

Following an infectious fever, purpura developed in an aged thoroughbred mare which did not react to the ordinary remedies and became of rather a chronic form, the limbs, neck, and walls of the abdomen being particularly affected. After three weeks treatment with $HgKI_2$ —5 grains three times a day, the mare had regained her normal appearance.

We occasionally see in horses an œdematous condition of the abdominal walls resulting from slight wounds, especially if these have been diligently fomented. On stopping the hot water treatment and injecting or dressing the wound with a 1-500 HgI_2 solution, and giving $HgKI_2$ internally we have had very satisfactory results.

An aged cart mare, not in foal, came in with a small swelling about the size of the palm of the hand on the median line of the abdomen from no apparent cause. Diuretics were given and then Potas. iodid. The swelling was increasing in size and covered the sides of the abdomen to the depth of three inches, the hind legs became œdematous, pitted on pressure; it appeared to us a case of ascites, and the prognosis was not at all hopeful. We put the mare on the $HgKI_2$ treatment, improvement commenced in a few days, in three weeks she was quite well.

In cellulitis caused by injuries to the elbow by the shoe, the part becomes very painful, pits on pressure and extends sometimes up the neck. We have used this double salt with advantage in these cases. We occasionally see this condition when the actual injury appears very small.

In the arthritis of foals due to umbilical infection we have had very fair success from the administration of one grain three times a day, continued for three weeks or a month.

In schirrhous cord recurring after operation, injecting the sinuses with a 1 : 150 solution, and giving the Biniodide internally has been satisfactory, no further operation being required.

Actinomycosis of the soft tissues, especially of the tongue in cattle; $HgKI_2$ in ten grain doses has been found equal to Potas. iodid., and is much less expensive.

A loud cavernous cough sometimes remains after prolonged attacks of pneumonia in the horse, with increased respiration on slight exertion no doubt due to the lesions resulting from the inflammation, these cases have improved very much by the continuous use of $HgKI_2$ with or without Iodide of arsenic as Donovan's solution.

Chronic scabby skin diseases in the horse and dog, with or without the Arsenic iodide, $HgKI_2$ has proved of benefit in many cases.

I have given HgI_2 with KI in doses of five grains three times a day for six weeks, without producing any symptoms of poisoning, this may be due to the salt being quickly absorbed and excreted, and to the antidotal powers of the Potas. iodid.

For external use. Mr. Wm. Dollar says Iodide of mercury in the proportion of one to ten of vaseline is equal to the ordinary blistering ointment of one to eight of lard. This ointment is useful for the enlarged thyroid glands of foals, especially of thoroughbred foals; these are known as "nuts" or "kernels" and appear to sometimes retard their growth and development.

An American veterinarian reports very successful cases of chronic abscesses with thickened walls, fistulous withers, capped elbows, etc., treated by filling the cavities—after evacuation of the contents—with the ordinary 1 to 8 Biniodide ointment.

As an ordinary vesicant a spirituous solution of Potas. Iodid. may be substituted for the lard or vaseline; this is useful for dressing the throat in chronic coughs, in laryngitis with effusion, and especially in that affection known as laryngismus stridius, or spasm of the muscles of the larynx.

A solution in spirit of 1 : 1000 is used for washing the skin, etc., before operations. 1 : 2000 watery solution does not tarnish the instruments.

We have tried many dressings for wounds, but do not find one to equal the Biniodide solution 1 : 1000 of water, it is the most powerful germicide we know, and should we get suppuration to any extent it is usually due to faulty drainage or the presence of a foreign body. This solution has been highly spoken of in cases of ophthalmia.

Biniodide gauze is a great advantage over the ordinary tow or wool for surgical cases, the extra cost is trifling, providing you buy it from the makers.

A lotion of 1 : 300 in water relieves the pruritus we find affecting the necks and tails of horses, and as a dressing for ringworm.

I have used a solution of 1 : 150 as an injection in quittor, poll evil, and abscess cavities, with very good results.

In conclusion, gentlemen, I hope my few scattered remarks have interested you. Perchance there is a member who has not already tried this drug internally for cases similar to those I have mentioned, I have every reason to think that should he do so he would not be disappointed.

Discussion.

Mr. Wolstenholme said he had been delighted with the practical, interesting, and useful paper they had just listened to. There was indeed hope for a Society whose younger members could bring such matters before them. As to this double salt he had not tried it. With respect to mercuric iodide he believed that in the medical world it was largely supplanting mercuric chloride. It is probably found more highly germicidal than corrosive sublimato, and it damages metal instruments far less, also it was not so readily absorbed when used in cavities. Moreover, mercuric iodide may be used with less fear than mercuric chloride. He had tried mercuric iodide 1 in 1000 in cases of dropsical joints, but could not say that good results had accrued.

Mr. Carter had enjoyed listening to the paper. He would like to ask whether Mr. Edwards treated all cases of lymphangitis with this double salt. Did he commence with the double salt straight away, or following other treatment?

Mr. Faulkner felt much indebted to Mr. Edwards for his kindness in placing before them such interesting matter. He had read, but never practised, the line of treatment put before them in the paper. He had enjoyed the happy way in which the uses of double salt had been explained, and would look forward to reading the paper when it appeared in print.

Mr. Taylor, speaking as a somewhat aged member of the Association, rose to congratulate a younger member to the position of essayist, and he most sincerely congratulated Mr. Edwards on his courage in bringing forth the production placed before them that evening. They wanted their young men imbued with the same spirit that Mr. Edwards had shown, for some of the older members were getting one leg on the shelf. He was not a stranger to the use of the double salt except in so far as internal treatment was concerned. He had used it with advantage in cases of purulent ophthalmia both in horses and in dogs. He had also used it for quittors, and so-called abscess from capped elbow. Hitherto he had refrained from using it internally, but after the experience related to them he would venture on a trial in future. He would like to ask if it was administered in the drinking water, or how?

The President expressed appreciation for the paper, and said it was always pleasing to have willing members coming forward to give papers.

Mr. Edwards, in reply, thanked them very much for their remarks. In reply to Mr. Carter he said they had tried giving other medicine beforehand, but they found that it made little difference whether they did so or not. As regarded its use in cases of ophthalmia he thought it was splendid treatment. Respecting its administration, it was dissolved in water and mixed with the food. They had not given it with the water alone.

Mr. Taylor begged to move that a letter of condolence be forwarded to the family of Mr. Ferrie, of Stockport, expressing regret at his decease.

On Mr. Wolstenholme seconding the proposal all present at the meeting rose in approval.

Morbid Specimens.

Mr. Stent submitted the uterus of a collie bitch. She had been under treatment for bronchitis, was 11 years old, very fat, and did not appear to get better of the bronchitis. The abdomen was rather large which caused him to ask if she was in pup, but the owner said not. She was destroyed, and on opening the abdomen he found a growth in the uterus like a tumour but resembling a pup in shape, which he submitted for inspection. The substance was afterwards forwarded to the laboratory for investigation.

Mr. WOLSTENHOLME presented portion of a tumour (sarcoma) found in the vagina of a bull bitch. The tumour returned again within three to four months after operation.

Prof. WILLIAMS asked if the bitch was infected by a dog. He remembered many years ago a very valuable collie that had two of these tumours on the penis, which were removed. Shortly afterwards he lined a bitch, and before she pupped she developed these tumours which came on rapidly. They were removed and she was able to pup, but the growths reappeared.

Mr. WOLSTENHOLME said it had been experimentally proved that these tumours can be removed and inserted into the vaginas of other bitches and reproduced.

Mr. EDWARDS submitted portion of the stomach of a horse affected with spiropteral tumours. The animal became very thin although the appetite remained good, and had attacks of colic. In the fæces were found little calcareous nodules that had formed on the outside of the little tumours. The subject was a five-year-old hunter.

Mr. PACKMAN moved a vote of thanks for the morbid specimens.

Mr. ROBERTS seconded.

Mr. G. H. LOCKE read a circular letter containing copy of the resolution passed at the last quarterly meeting, relative to the return of a veterinary surgeon to the House of Commons. This circular had been sent to all the veterinary associations throughout Great Britain and Ireland, and replies from the secretaries of the following Societies had been received and were now read :—Glasgow, Scottish Metropolitan, Royal Counties, Liverpool University, Southern Counties, Yorkshire, Central, Eastern Counties, Midland Counties, Ireland V.M.A., Royal College of Veterinary Surgeons, and the Ontario V.M.A. In each instance expressions of approval were made.

Mr. PACKMAN said they would all be interested to hear what Mr. Fraser had to say in reference to Parliamentary representation.

(To be continued.)

EPIZOOTIC LYMPHANGITIS ORDER OF 1905.

The Board of Agriculture and Fisheries has made a new Order dealing with epizootic lymphangitis, which Order came into force on the 14th of this month. The old Order is revoked as from that day, but its terms are all repeated in the new Order with additional provisions providing for—

(*a*) The transmission by the Police of notices of outbreaks by telegraph to the Board (Article (1) 3).

(*b*) Immediate restriction in case of an outbreak on movement of diseased or suspected horses, and horses which have been in contact with such horses. (Article 3).

(*c*) Detention by notice of horses connected with the outbreak with a view to their being kept under observation. (Article 7), and

(*d*) The issue of public warnings as to existence of disease. (Article 8).

DISEASES OF ANIMALS ACTS 1894 TO 1903 SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Rabies. Cases Confirmed.		Sheep Scab.	Swine Fever.	
	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Dogs.	Other	Out-breaks	Out-breaks	Slaughtered *
GT. BRITAIN. Week ended Sept. 23	19	36	..	..	19	35	..	..	7	10	45
Corresponding week in 1904 ..	15	24	..	..	45	63	..	..	6	15	100
Corresponding week in 1903 ..	9	12	..	..	32	64	..	..	3	25	253
Corresponding week in 1902 ..	11	14	..	..	25	37	..	..	3	28	145
Total for 38 weeks, 1905	719	1021	..	..	915	1580	..	..	672	630	2870
Corresponding period in 1904 ..	722	1137	..	..	1172	2071	..	..	1083	1032	4808
Corresponding period in 1903 ..	579	881	..	..	1119	1869	..	..	1196	1170	6063
Corresponding period in 1902 ..	510	815	1	120	865	1535	12	11	1130	1292	5930

Board of Agriculture and Fisheries, Sept. 26, 1905.

IRELAND. Week ended Sept. 16	..	..	..	..	..	13	..	..	..	..	26
Corresponding Week in 1904 ..	..	..	..	..	..	..	..	..	1	9	50
Corresponding Week in 1903 ..	..	..	..	..	..	..	..	..	3	7	52
Corresponding Week in 1902 ..	..	..	..	..	..	4	..	..	2	3	98
Total for 37 weeks, 1905	3	3	..	..	15	57	..	..	232	41	1320
Corresponding period in 1904 ..	3	3	..	..	9	30	..	..	374	166	3356
Corresponding period in 1903 ..	2	3	..	..	2	3	2	..	403	142	3076
Corresponding period in 1902 ..	..	..	..	..	8	34	..	..	443	142	2820

Epizootic Lymphangitis, Jan. 2 cases; Feb. 2; Mar. 10: May, 1; June, 7: July, 2; Week ending Sept. 9, 1: Total 25

Department of Agriculture and Technical Instruction for Ireland, (Castle Street), Dublin, Sept. 21, 1905.

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection.

CONDIMENTS IN ANIMAL FOODS.

Some experiments as to the influence of condiments on food consumption, digestibility, and milk secretion, carried out at the Hohenheim Agricultural Experiment Station by Herr Gustav Fingerling in 1902-4, have recently been published in the *Landwirtschaftliche Versuchs-Stationen* (Vol. LXII., Parts I.-III).

The experiments, which were very carefully conducted, were divided into two parts : (1) The influence of condiments on food consumption, digestibility, and milk secretion in combination with a food poor in condimental substances; and (2) Their value when combined with an ordinary appetising food. The feeding stuff employed in (1) was artificially compounded of certain materials so as to make up the required proportions of albuminoids, fat, and carbo-hydrates, but to avoid appetising or seasoning materials. It was composed of a bye-product of straw used for manufacturing purposes, earth-nut oil, starch flour, and a bye-product of the manufacture of a protein preparation (Tropon), together with spelt-straw. Certain substances were added to supply mineral matter in the food. In the second part of the experiment a ration in common use was selected, viz., meadow hay, brewers' grains, and sesame cake.

The prepared mixtures of condiments which are sold in Germany under many high sounding names are mostly composed of combinations of the seeds of fennel, fenugreek, aniseed, caraway, and of preparations of juniper, carob, ginger, gentian, liquorice, marsh mallow, charcoal, and various salts, The seeds of fennel, fenugreek, and aniseed were chiefly employed in these experiments, and also one or two patent compounds. The results are valuable as showing by exact experimental methods the small advantage to be obtained from preparations of this character. It may be noted, however, that the influence of condiments on the nervous system and good condition of the animals, not being a factor capable of measurement, did not receive exhaustive consideration. The conclusions arrived at are as follows :—

The condiments tested operated favourably (1) on the food consumption, so that more food was consumed, and (2) by influencing the activity of the milk glands, so that the yield of milk was increased and its quality improved. This favourable result occurred, however, only with foods which were extremely poor in appetising materials, such as the experimental food (1) mentioned above. In a normally appetising food an addition of condiments had no effect. The natural food of animals, it is observed, contains an amply sufficient quantity of seasoning matter, and the further artificial addition of condimental substances is mostly ineffectual, and may under some circumstances be directly injurious, as the long continued use of strong spices may eventually lead to a chronic stimulation and a catarrhal affection of the mucous membrane of the stomach.

The condiments investigated did not show any power of increasing the digestibility of food. It is just this property which has hitherto been chiefly attributed to them, and it has been assumed that by their appetising effect they were able to bring about an increased secretion by the digestive glands, which resulted in better use being made of the food. This view was not supported by the experiments, as with neither of the foods used was improved digestibility apparent.

So far, therefore, as the practical use of these substances is concerned, it appears that the addition of condiments is but seldom advisable, as, for example, when an unpalatable food, such as bad hay, is used. Most of the food materials used on the farm contain condimental substances in sufficient quantities, but in the occasional instances where the food is unpalatable, a trial is recommended with the seed of fennel, aniseed, fenugreek, caraway, etc. The writer concludes by urging farmers not to purchase condimental powders, which are composed in reality of nothing but a mixture of these seeds, with the addition of some other material, such as salt, charcoal, etc., and which are sold at a very much higher price than is warranted by the value of the materials. —*Journal of the Board of Agriculture.*

The International Veterinary Congress.

The International Veterinary Congress, which has recently concluded its sittings in Budapest, is the eighth of the series. The first was held in 1863, when a conference of representative veterinary surgeons from the various European States met in Hamburg, mainly for the purpose of devising measures to combat cattle plague. The second Congress was held two years later, *viz.*, in 1865, in Vienna, and, like its predecessor, it was almost entirely devoted to the study of cattle plague, which had recently established itself in Great Britain and threatened to overrun the whole of Europe.

At least in respect of numbers, this Congress proved to be the most successful which has yet been held, the members numbering over 1,400, or about 400 more than at the preceding Congress at Baden-Baden. About one-third of these were Hungarian, and the remainder included representatives of the veterinary profession from every European country, as well as the United States, Egypt, and South Africa, while even distant Japan and China were represented by one member each. The Congress was formally opened on the afternoon of Sunday, 3rd September, when the Hungarian Minister for Agriculture presided. His Highness the Archduke Joseph, patron of the Congress, speaking first in Hungarian and afterwards in French, offered a hearty welcome to the foreign members, while the Minister of Agriculture successively addressed the meeting in Hungarian, German, French, and English. Appropriate acknowledgment was made in short speeches by the representatives of the different countries.—*Standard.*

Cruelty to Pigs.—Consigned in Lime-laden Trucks.

At Birmingham Police Court on Wednesday, Sept. 20th, before Messrs. Powell and Barrows, Frank Mills, a porter on the Cambrian Railway at Aberystwyth, was summoned by the Birmingham Society for the Prevention of Cruelty to Animals for cruelly ill-using a number of pigs. Defendant, who lives at Llanbadarn, was not present. He wrote stating that he had been dismissed from the company's service, and could not pay his fare to Birmingham.

Mr. Sharp, on behalf of the Society, elicited a terrible story from the various witnesses. It appeared that on August 21, 18 pigs were consigned by Mr. Morgan Parry, of Cefyncoch, Llanilar, near Aberystwyth, to Mr. Samworth, a Birmingham dealer, residing in Pershore Road. Miss Parry, whose statement was translated into English by Police-Constable Davies, informed the Bench that her father sent 5,000 pigs away in a year. On the 22nd she went down with Mr. Samworth's pigs to Aberystwyth Station, and handed them over to Mills. There were three or four hundredweight of lime in the trucks he was going to put them into, and when Miss Parry pointed this out to him, he said, "Oh, it won't harm them." Afterwards, however, he took the truck up the line, and took most of the lime out. Witness asked him to put sawdust in the bottom of the truck, but he did not appear to have done so.

According to other evidence, when the pigs reached Birmingham they were in a sorry plight. The lime

adhered to their bodies like cement, two of them were blind, and the bodies of the whole eighteen had been badly burned everywhere except on the back. Two were in such a terrible state that they had to be slaughtered immediately. Mr. A. E. Bonham, a Corporation meat inspector, said he had never seen animals in such a state. Their skins were burned to crackling.

Mr. Blakeway, a veterinary inspector, said the animals had been baked alive, and must have suffered intense agony. He produced a piece of charred skin taken from one of the slaughtered pigs. If the animal had been permitted to live, added witness, the skin would have come off itself. Two of the pigs had their eyes closed up with lime, and the whole of them squealed loudly when any attempt was made to move them.

Inspector Argue, of the Society, who paid a visit to Aberystwyth and saw Mills in company with the station master, said that when questioned defendant admitted there was lime in the trucks, but said he did not think it would hurt the pigs. The station master then said that Mills had neglected his duty, and would be dismissed.

Mr. Powell described it as the worst case of cruelty that had ever been before the Bench. It was a case which could not be met by a fine, and defendant would be sentenced to three months' hard labour, which was the utmost the law allowed. "It is unfortunate," added the Chairman, "that the defendant is not present to hear what we think about him."—*Birmingham Daily Post.*

Maggots and Cruelty to Sheep.

A case of considerable interest to Agriculturists was dealt with at the Shire Hall, Nottingham, when George Goodchild and Claude Goodchild were summoned by the R.S.P.C.A. for causing cruelty to a sheep between August 31st and September 5th. Mr. A. Barlow prosecuted on behalf of the Society, and Mr. W. B. Smith defended.

Mr. Barlow explained that the Inspector and two police sergeants found a sheep at Wilford in a terrible state. It was simply covered with maggots, and another one had been literally devoured to death. Nothing whatever had been done to alleviate the animal's suffering, and the defendants, he suggested, were deserving of very severe punishment.

Inspector Watkin gave evidence that on the 5th inst., he went to a field at Wilford occupied by the defendant, and there found three sheep, two ewes and a wether. One of the ewes had wool hanging from its back, and there was wool all over the field. Catching the sheep he found it in a shocking condition. It was literally covered with maggots, and there were immense deep wounds on the back and flanks. The animal had not been treated in any way. He then went to the shed belonging to the defendants on Meadow Lane, and there saw a black ewe dead. This was in far worse condition than the other, and the ribs were as bare as if they had been picked. Going to No. 4 Ryhill Street, he saw the younger defendant, who said his father went away for his holidays on the previous Saturday. He (the younger defendant) saw one of the sheep lying down on the Monday morning, but did not go to it, nor did he go to it in the afternoon, though he saw it still in the same place. On the Tuesday morning he found it dead.

In cross-examination by Mr. Smith the witness said there must have been signs of the maggots when the elder defendant was in the field on the Friday. It would take four or five days for the animal to be eaten alive as that one was. He had the one that was still alive sheared and dressed, and he believed it would recover.

In reply to the Chairman witness said he was aware that maggots made very rapid progress, especially early in the year, but this was rather late.

Sergeant Chandler corroborated the statement as to the condition of the sheep.

Mr. Levie, veterinary surgeon, stated he was brought up in a sheep country and had never seen a case so bad. The one which was killed by maggots must have suffered great agony. That one must have shown signs on the Friday that it was fly-blown. The other, perhaps, would not.

The Chairman: But maggots can practically kill a sheep in 24 hours.

Witness: Yes, if attacked on the abdomen, but the wounds on these commenced on the back.

The Chairman: Supposing the sheep was badly struck on the Friday it would be possible for it to be killed by Monday?

Witness: Yes, if the weather was close.

Mr. Smith, for the defence, said that the elder defendant saw the lambs on the Thursday, and closely examined them. They were in perfect condition, and were not fly-blown then. On the Friday he was busy, and did not see them, and next day went on his holidays. How a charge therefore could be brought successfully against him he failed to see.

Mr. Goodchild, sen., gave evidence bearing out Mr. Smith's remarks, and the son stated that the sheep was not lying in the same place on the Monday afternoon as on Monday morning. He thought it was simply lying down for a rest, and had no idea there was anything the matter or he certainly should have gone to it.

Charles Thomas Mills, farmer, stated that he had examined sheep, found them not fly-blown, and yet discovered them dead within 24 hours.

The magistrates (Mr. T. Potter, Mr. W. Hicking, and Mr. T. Metcalf) consulted for one minute, and then Mr. Potter announced that having regard to the short time it took to kill a sheep after it was fly-blown they could not convict Mr. Goodchild, sen. With respect to his son, they felt that there had been a great amount of carelessness and negligence, but hardly sufficient to justify a conviction.—*Nottingham Post.*

Cruelty to Pigs in London.

At Tower Bridge, William Matthews, carman, of Lion Street, Poplar; William Crockford, carman, of Johnson Street, E.; and Sydney Dance, foreman, of Warnham Street, Kennington, were summoned before Mr. Kettle by the R.S.P.C.A. for cruelty to pigs. Mr. Sydney, solicitor, prosecuted; Mr. Leycester, barrister, defended; and Mr. Watson, barrister, watched the case on behalf of the Great Northern Railway Company.

Mr. Sydney said the defendants were in the employment of Messrs. Cornell and Co., meat carriers. A quantity of pigs were sent from the north of England for shipment to the Hungarian Government. On August 22nd they arrived at King's Cross Station in good condition, and Messrs. Cornell and Co. were employed to convey them from the station to Mark Brown's wharf, Bermondsey, for shipment. Dance was sent by the firm to the station to see that the pigs were properly removed, and the other defendants were two of the carmen engaged. The pigs were put in Messrs. Cornell's vans, which were totally unsuited for the purpose. When Matthews and Crockford arrived at the wharf a number of pigs were taken from their vans dead and others were dying. In one van as many as 22 pigs were packed, and in another 20, whereas there was only accommodation in each for 10 or 12.

Charles Robert Gregory, superintendent at Mark Brown's wharf, said the majority of the pigs were large breeding sows, and apparently they had been endeavouring to get their noses into the openings between the

sides of the tail-boards of the vans for air. Of the 22 pigs in one van 17 were either dead or dying, and the others were more or less insensible. Of the 21 in another van, seven were dead or dying.

Mr. Thomas Hedson, of Eastgate, Peterborough, said that some of the pigs were bred by him and were purchased by Mr. Oswald Peak, Under-Secretary to the Hungarian Government. He assisted Mr. Oswald Peak in choosing others. The vans were not fit to convey live pigs in, but if necessity compelled their use they should have been uncovered and have held not more than 10 or 12.

Mr. Kettle said it was the worst case of cruelty he had known, and he sentenced the prisoners to three months' hard labour each.—*The Times.*

The Devon Registration Scheme.

The sale of young horses under the Devon County Agricultural Association scheme of registration at Holsworthy, was attended with little success. The scheme was inaugurated by Mr. A. Scott-Browne with the object of improving the breed of horses in the county. So far it has certainly not met with the support it deserves. But the suggestion of Mr. C. M. Saunders, of Bovacott, that the districts which have taken up the scheme should amalgamate and hold a combined sale at some suitable centre will meet with approval. If carried out it would, perhaps, have satisfactory financial results. Out of 30 lots offered at Holsworthy, only two were sold, the bidding in the other cases not reaching the reserved figure.

Anthrax in Hides.

At an inquest at Southwark on Mary Barrett, the Coroner said there was a suspicion of anthrax in this case, The husband deposed that on the 13th inst., he had assisted in landing a quantity of hides from China. He remembered several cases of anthrax since he had been working at his occupation. Dr. Stevenson said that deceased was found to be suffering from anthrax. It was then too late for treatment of the deceased except by means of incision, and, though that was tried, death occurred the same day. The jury returned a verdict of "Death by misadventure."—*Daily News.*

Personal.

Mr. SYDNEY DODD, M.R.C.V.S., Demonstrator of Bacteriology and Pathology at the Royal Veterinary College, London, N.W., has been appointed Assistant Government Veterinary Bacteriologist to the Transvaal, and sails on October 14th to take up his duties.

Mr. TRIGGER asks us to acknowledge (on his behalf for the present) the large number of kind and sympathetic letters he has received from members of the profession regretting the accident that has befallen him. They are so numerous that it is impossible to attempt to answer them individually; later on he hopes to do so; in the meantime he is most grateful for kind sympathy tendered. The case is of course painful and tedious, but the doctors express themselves so far perfectly satisfied with progress.

O'CONNOR—MURPHY.—At St. Mary's Cathedral, Edinburgh, on the 14th inst., by the Very Rev. Canon Stuart, assisted by the Rev. Andrew Logue, James Joseph O'Connor, M.R.C.V.S., Professor of Surgery, Royal Veterinary College, Ireland, elder son of Daniel O'Connor, Esq., The Ward, Co. Dublin, to Marian Cecilia (Cis), elder daughter of the late James Murphy and Mrs. Murphy, 13 London St, Edinburgh.

ARMY VETERINARY DEPARTMENT.

Extract from *London Gazette*,
WAR OFFICE, PALL MALL, Sept. 22.

Major F. J. Short retires on retired pay.

ALDERSHOT ARMY MANŒUVRES, SEPT., 1905.

ARMY CORPS STAFF.—Principal Veterinary Officer—Major F. C. Stratton.

1ST DIVISION.—Veterinary Officer—Lieut. K. McL. McKenzie.

2ND DIVISION.—Veterinary Officer—Lieut. D. O. Turnbull.

3RD DIVISION.—Veterinary Officer—Lieut. A. S. Lawrie.

OBITUARY.

WALTER BURT, M.R.C.V.S., Vet.-Maj., A.V.D., retired, "Cleaveland," Lustleigh, Devon
Graduated, Lond: May, 1860.

Major Burt's death occurred at Eastbourne on Friday 22nd inst., in his 67th year. He was second son of the late James Burt, of Old Town, Eastbourne. The interment was at Ocklynge Cemetery, Eastbourne, on Tuesday last; the service was at St. Mary's Parish Church.

PRICE.—On the 14th inst., at Essex Lodge, 30 Brixton Hill, Emma Sabberton, the dearly beloved wife of T. Salusbury Price, M.R.C.V.S., of Brixton Hill, and Kennington Cross, in her 68th year.

CORRESPONDENCE.

EASTERN COUNTIES V.M.S.

Sir,

The wording of Mr. W. Shipley's resolution, which was before the above Association at the meeting on the 7th inst., must be sorrowful reading to all members of the profession who have at heart the welfare of veterinary medical societies.

Perhaps, at present, I ought not to write a word about the resolution which one might now consider to be *sub judice*, but on account of old associations with the County of Norfolk, I plead privilege.

Doubtless several of our societies during their existence have passed through a similar vicissitude, the average attendance at the meetings has been comparatively small, interest in the transactions of a society wanes, and history repeats itself. Sometimes the reconstruction of the *personnel* of the executive, or a constant change of place of "venue" infuses fresh life and vigour into the deliberations of a Society.

As an ex-member of the E.C.V.M.S., I am able to look back with pleasure to the discussions of such practical papers which dealt with "The prophylaxis of contagious abortion in cows," "Laminitis," "Shoulder lameness," etc., also to the demonstrations of the castration of cryptorchids.

The Eastern Counties, by virtue of the great amount of breeding and feeding of young animals which takes place within its boundaries, should be able to provide enough material for discussion at each meeting. It is not necessary to find something new in order to bring forward an interesting subject for discussion, and it is wonderful how charming the old subjects appear when they are presented in a new light, or by a different essayist.

At the meeting of the Society as recorded in your valuable journal last week, I notice some of the members were inclined to upbraid the younger members for their apathy; presumably the railway facilities in the Eastern Counties are not the best for passenger traffic, which circumstance probably prevents many members from attending as frequently as they would desire. Perhaps the natural retic-

ence of the younger members of the Society will be found to be the cause of the alleged disinclination to take an active interest in the meetings.

I confess it is not much diversion to be a passive attendant at any meeting. Let us hope before the younger members become senile they will "break the ice," and the E.C.V.M.S. still continue to be one of the oldest and one of the most useful of our Associations.—Yours faithfully,

HORACE L. ROBERTS.

COMMUNICATIONS AND PAPERS RECEIVED.—Messrs. A. Over, L. Roberts, J. L. Barling, J. J. Kelly.

The Birmingham Daily Post, *The Birmingham Daily Mail*, *The Nottingham Post*, *The Yorks Weekly Post*, *The Louth Advertiser*, *The Evening News* (Portsmouth).

Veterinary Societies - Addresses.

Alterations for this list must be duly notified by the Secretaries

BORDER COUNTIES V.M.S.
Pres: Mr. J. W. Hewson, M.R.C.V.S., Wigton
Hon. Sec. (pro tem.): Mr. F. W. Garnett, M.R.C.V.S., Dalegarth, Windermere
Meetings, Second Friday of Feb., June, and October

CENTRAL V.M.S.
Pres. Mr E. Lionel Stroud, F.R.C.V.S., 29 Spring-st., Hyde Park, W.
Hon. Sec: Mr. H. A. MacCormack, M.R.C.V.S., 122 St. George's Avenue, Tufnell Park, N.
Meetings, First Thursday in each month, except August and September, 10 Red Lion Square, Holborn, at 7 p.m

CENTRAL CANADA V.A.
Hon. Sec: Mr. A. E, James, Ottawa

CENTRAL V.A. OF IRELAND.
Pres. Mr. M. J. Cleary, M.R.C.V.S., Kilpatrick, Mullingar
Hon. Sec: Mr J. J. Vahey, M.R.C.V.S., Ballinrobe
Treas: Mr. J. F. Healey, M.R.C.V.S., Midleton

EASTERN COUNTIES V.M.A.
Pres: Mr. Arthur S. Auger, M.R.C.V.S., Saxmundham, Suffolk
Hon. Sec. & Treas: Mr. H. P. Standley, M.R.C.V.S. Wymondham
Meetings, Second Tuesday, Feb. and July

GLASGOW V.M.S.
Pres. Principal McCall.
Hon. Sec. Mr. F. McShane

VET. MED. ASSN. OF IRELAND.
Pres: Mr. J. McKenny, M.R.C.V.S. 116 Stephens-green-west, Dublin
Hon. Treas: Mr. M. Hedley, F.R.C.V.S, 6 Royal Terrace West, Kingstown
Hon. Sec. Mr. Chas. Allen, F.R.C.V.S., 35 North Frederick st., Dublin

LANCASHIRE V.M.A.
Pres: Mr. W. Packman, M.R.C.V.S., The Wylde, Bury
Hon. Sec.: Mr. G. H. Locke, M.R.C.V.S. Grosvenor-street, Manchester
Meetings, 1st Thursday in April, June, Sept., & Dec.

LINCOLNSHIRE V.M.S.
Pres. Mr. T. A. Rudkin, M.R.C.V.S., Grantham
Hon. Sec: & *Treas*: Mr. T. W. Turner, M.R.C.V.S., Sleaford
Meetings, Second Thursday Feb., June, and October

LIVERPOOL UNIVERSITY V.M.S.
Pres: Prof. Boyce, F.R.S.
Hon. Sec. & Treas: Jno. T. Share-Jones, University, Liverpool
Meetings, May, July, October, January.

VET. ASSN. OF MANITOBA.
Hon. Sec: Mr. F. Torrance, Winnipeg

MIDLAND COUNTIES V.M.A.
Pres: Mr. W. Hunting, F.R.C.V.S., Chelsea, London, S.W.
Hon. Sec: Mr. H. J. Dawes, F.R.C.V.S., Camden House, High-st., West Bromwich
Meetings, Second Tuesday, Wednesday, Thursday, and Friday alternately in Feb., May, Aug. and Nov.

NATIONAL VET. ASSOCIATION.
Pres: Prof. W. O. Williams, F.R.C.V.S., Liverpool
Sec: Mr. William Hunting, F.R.C.V.S.
Treas: Mr. F. W. Wragg, F.R.C.V.S., Whitechapel, London.

NATIONAL VETERINARY BENEVOLENT & MUTUAL DEFENCE SOCIETY.
Pres: Mr. W. A. Taylor, F.R.C.V.S., Brick-st, Manchester
Treas: Mr. E. Faulkner, F.R.C.V.S., Manchester
Hon. Sec: Mr. Sam. Locke, M.R.C.V.S. Grosvenor Street, Oxford-st., Manchester

NORTH OF ENGLAND V.M.A.
Pres: Mr. W. Hunter, M.R.C.V.S., Newcastle-on-Tyne
Hon. Sec: Mr. E. R. Gibson, M.R.C.V.S. 25 Marlborough-street, Seaham Harbour
Meetings, Third Friday, Feb., May, Aug. and Nov.

NORTH OF SCOTLAND V.M.S.
Pres: Mr. David Crabb, M.R.C.V.S., New Aberdour
Sec. & Treas: Mr. Clement Baxter, M.R.C.V.S., Elgin

NORTH WALES V.M.A.
Pres: Mr. R. Jones, M.R.C.V.S., Towyn, Merioneth
Hon. Sec. T. C. Howatson, M.R.C.V.S., St. Asaph
Meetings, First Tuesday, March and September

ONTARIO V.A.
Pres: Mr. J. H. Tennent, V.S., London, Ontario
Sec: & *Treas*: Mr. C. H. Sweetapple, V.S., Toronto, Ontario

PROVINCE OF QUEBEC V.M.A.
Hon. Sec: Mr. Gustave Boyer, Rigand. P.Q.

ROYAL COUNTIES V.M.A.
Pres: Mr. H. C. Jagger, M.R.C.V.S., Bicester
Hon. Sec. & Treas: Mr. Percy J. Simpson, M.R.C.V.S., Kendrick House, Maidenhead
Meetings, Last Friday, Jan., June and Nov.

ROYAL SCOTTISH V.S.
Pres: Mr. Reid, M.R.C.V.S., Auchtermuchty.
Hon. Sec: Mr. W. D. Fairbairn, M.R.C.V.S., Cupar, Fifeshire

ROYAL VETERINARY COLLEGE M.A.
Pres: Mr. E. E. Brown, M.R.C.V.S.,
Hon. Sec: Mr. W. T. Collins, M.R.C.V.S.
Assist. H.S. Mr. F. W. Chamberlain.

SCOTTISH METROPOLITAN V.M.S.
Pres: Mr. John Hutton, M.R.C.V.S., Kelso
Hon. Sec: Mr. John McIntosh, M.R.C.V.S., Eskbank

SOUTH DURHAM AND NORTH YORKSHIRE V.M.A.
Pres.: Mr. H. Peele, M.R.C.V.S., 30 Church-street, Durham
Hon. Sec: Mr. W. Awde, F.R.C.V.S., Stockton-on-Tees.
Meetings, First Friday, Mar., June, Sept. and Dec.

SOUTHERN COUNTIES V.S.
Pres: Mr. F. W. Wragg, F.R.C.V.S., Whitechapel, London, E.
Hon. Sec: Mr. J. Alex. Todd, M.R.C.V.S., Worthing
Hon. Treas: Mr. E. W. Baker, M.R.C.V.S., Wimborne
Meetings, Last Thursday, Mar., June and Sept.

TRANSVAAL V.M.A.
Pres: Mr. J. M. Christy, M.R.C.V.S., A.P.V.S., Pretoria
Hon. Treas: Mr. J. H. Bell, M.R.C.V.S., D.V.S., Krugersdorp
Hon. Sec: Mr. T. H. Dale, M.R.C.V.S., D.V.S., Potchefstroom

WESTERN COUNTIES V.M.A.
Pres: Mr. G. H. Gibbings, F.R.C.V.S., Tavistock
Hon. Sec. Mr. W. Ascott, M.R.C.V.S., Bideford
Hon. Treas: Mr. P. G. Bond, M.R.C.V.S., Plymouth
Meetings, Third Thursday, March, July and November

WEST OF SCOTLAND V.M.A.
Pres: Mr. James Weir, F.R.C.V.S., 24 Pollock st., Glasgow
Joint Hon. Secs: & *Treasrs*: Messrs. Hugh Begg and John R. McCall, Vety. Coll
Meetings, Second Wednesday, May, Oct. and January.

YORKSHIRE VET. ASSOCIATION
Pres: Mr. F. Hallilay, M.R.C.V.S., Dewsbury
Hon. Sec; Mr. J. Clarkson, M.R.C.V.S., Garforth, nr. Leeds
Hon. Treas: Mr. J. E. Scriven, M.R.C.V.S., Tadcaster